

Application Serial No. 10/578,964
Docket No. 1093-155 PCT/US
Response to December 13, 2007
Non-Final Office Action

REMARKS

The Non-Final Office Action mailed December 13, 2007 and the references cited therein have been carefully considered. Claims 1-9 are pending in the application, including independent Claim 1. Applicant has not amended any of the claims in the present response. Applicant responds specifically below to the issues raised in the subject Office Action.

In response to the objection to the Drawings, three (3) sheets of drawings are submitted herewith, each marked "REPLACEMENT SHEET". The replacement drawings are identical to the drawings presented in the original PCT Application (PCT/DE04/02329) to which the instant application claims priority. Accordingly, no new matter has been submitted as part of this response. Therefore, Applicant respectfully requests that the objection to the drawings be reconsidered and withdrawn.

In the Office Action, Claims 1-4 and 9 were rejected under 35 U.S.C. 103(a) as being obvious over published PCT Application No. PCT/DE03/01042 to Mitsam (hereinafter "Mitsam", see U.S. Patent Application No. US2006/0108071A1 to Mitsam, which is an English language equivalent thereof) in view of U.S. Patent No. 3,917,774 to Sagane et al. (hereinafter "Sagane"). Additionally, Claims 6 and 7 are rejected under 5 U.S.C. 103(a) as being obvious over Mitsam in view of Sagane, as applied above, and further in view of U.S. Patent No. 5,458,477 to Kemerer et al (hereinafter "Kemerer").

Mitsam is relied upon in the rejections for teaching all the elements of the claims, with the exception of following:

- a sliding surface in the tangential plane connecting the two support rollers;
- an embossing belt having a low-friction layer at its inside; and
- a support body and/or compressed gas inlet provided with a heating device.

The Office Action combines Mitsam with Sagane to reject as obvious Claims 1-4 and 9, and relies on Sagane for teaching the above noted missing limitations.

Initially, it must be noted that one of ordinary skill in the art at the time the subject invention was made would not combine Mitsam and Sagane to arrive at the claimed invention. Mitsam and Sagane disclose machines that are designed for very different kinds of applications; Mitsam is for hot embossing of a foil and Sagane is used for forming a material through combined heating and cooling. Hot embossing uses a combination of heat and pressure for the purpose of affixing a transfer layer of a foil onto another surface. In Mitsam, as in the present invention, the embossing strip is subjected to a combination of heat and pressure in order to transfer the transfer layer to a stable preformed substrate. The Examiner's attention is directed to the fact that every reference made in Mitsam to its embossing substrate body (38), is either preceded or immediately followed by an indication that the substrate "is stable in respect of shape" (see, Mitsam paragraphs [0024] – [0027], [0029], [0030] and [0032]).

Sagane discloses an apparatus for shaping and forming a foamed resin article. Sagane uses a rigid metal tube (9) in order to give form to a fluid and pliable foam resin that is conveyed therethrough by belts. The rigid support tube (9) is necessary to make the resin conform to a desired shape. The tube (9) prevents outward bulging by the belts from the expanding foam

resin passing therethrough, which has a high expansion rate and a high expansion pressure (see, Sagane col. 7, lines 13-20). Also, rather than extruding foam through a two dimensional aperture, a smooth elongate sliding surface (the inside of the tube 9) is needed to mold the resin and allow it to set as it passes. In contrast, in the embossing art, the shape of the stable substrate is not changed by the embossing process (i.e., it is stable in respect of shape), thus the belts do not need to be prevented from bulging and the substrate surface does not need to be made smooth. Thus, the same motivation to incorporate such a sliding surface in Sagane does not exist for Mitsam. In fact, there is no teaching, motivation or suggestion in Mitsam or any of the cited prior art to combine Mitsam and Sagane in this way.

To the contrary, one of ordinary skill in the art would be motivated not to use the sliding surface taught by Sagane in an embossing device as taught by Mitsam. Sagane clearly identifies that problems may arise, due to friction between the endless belts (5, 6, 7) and the rectangular tube (9) (see, Sagane, col. 7, lines 55-65). In Sagane it is suggested that the friction problem can be addressed by using durable materials, adding lubricants such as those used in bearings, or by adding rolls (10) or rolling means between the belts and the tube (see, Sagane Fig. 3 and col. 8, lines 13-55). However, in Mitsam the use of a deflection roller (18) presses the belt (20) against the support rollers (28), which causes or increases friction between those elements. Sagane and the other molding process prior art do not use such deflection rollers. Thus, replacing the support rollers (28) of Mitsam with a sliding surface as taught by Sagane would create an even higher frictional environment, in direct contrast to the teaching of both Sagane and Mitsam. Additionally, lubricants such as those used in bearings, as taught by Sagane (see, Sagane col. 7,

lines 64-65) can not be used in an embossing device. Such lubricants would adversely affect the transfer film. Accordingly, modifying the Mitsam device to add such undesirable effects would constitute a teaching away from such a combination. Thus, one of ordinary skill in the art would not add a sliding surface as taught by Sagane to the Mitsam device. Thus, the prior art and particularly Sagane teaches away from adding a sliding surface as defined by the claims of the instant invention.

Further still, there is no motivation, teaching or suggestion to relocate or include additional heating devices in Mitsam. Sagane discloses a molding process that uses heat or changing temperature conditions to expand and set the thermosetting resin being processed (see, the Abstract of Sagane, also Examples 1-3 in col. 15-18). In a thermal-setting mold process, precise control of the thermal conditions is necessary for the thermosetting resin to form properly. This is why, for example, Sagane teaches applying heat at a precise temperature (120 degrees C) over a precise length of the tube (9) (“in the range beginning at 2m away from the inlet end of the tube and terminating at 5m away from said inlet end.”; col. 16, lines 9-14). Sagane further discloses applying cooling jackets to the same tube (9) near the outlet side.

The same motivation does not apply to an embossing station as recited by the claims. Such an addition to Mitsam would get in the way of the existing support rollers (28). Also, Mitsam does not need such an addition as it already includes heating devices (24). By placing the heating devices (24) remote from the support structure (28), Mitsam has the advantage of being able to heat longer stretches of the embossing belt without directly heating the product.

Contrary to the suggestion in the Office Action, on page 6, second full paragraph, Sagane does not teach or suggest that application of heat directly to the molding passage (9) would improve the quality of the product obtained by an “*embossing device*”. Sagane never mentions nor relates to an embossing device, but rather a molding device, which is a very different machine.

Therefore, there is no teaching, motivation or suggestion in Mitsam, Sagane or any of the cited prior art to add to or relocate the heating devices in Mitsam.

Further, the Office Action combines Mitsam, Sagane and Kemerer to reject as obvious Claims 6 and 7. This rejection relies on Kemerer for teaching the use of a support body having a gas permeable porous flat element by which the sliding surface is formed. Kemerer discloses a forming or molding apparatus for thermoplastic materials akin to that of Sagane. As discussed above with regard to Sagane, one of ordinary skill in the embossing art would have significant motivation not to use a sliding support surface due to added friction, in the form of backup plates (22) as taught by Kemerer with Mitsam. Accordingly, there is no teaching, motivation or suggestion in Mitsam, Sagane, Kemerer or any of the cited prior art to incorporate into Mitsam a support body as disclosed by Kemerer.

Additionally, Applicant once again traverses the characterization that apparatus for molding thermosetting resins are “analogous art” to embossing devices. Not only are these different fields, but they handle very different materials (i.e., foam/thermoplastic resins versus a transfer foil and associated stable substrate) for very different purposes (i.e., forming the shape of an article versus transferring an embossing film to a substrate) under different pressure

conditions (i.e., the expanding foam applying pressure to the belts (expansion) versus the sliding surface applying pressure on the embossing film (compression). The Federal Circuit has held that such differences are evidence of “non-analogy” between prior art references. *In re Clay*, 966 F.2d 656, 659, 23 U.S.P.Q.2d 1058, 1061 (Fed. Cir. 1992). In fact, all of the prior art references combined by the Examiner with Mitsam are material molding or shaping devices that need heat for setting the handled articles. Such thermal molding devices are clearly different from embossing devices that transfer a transfer layer of an embossing film on to an element to be embossed as claimed. Further evidence of “non-analogy” is demonstrated by the fact that none of the Patent Office classifications listed for the cited thermal press type devices overlap with the classifications for Mitsam. It is well settled that the Patent Office classification of references is further evidence of non-analogy. *In re Ellis*, 476 F.2d 1370, 1372, 177 U.S.P.Q. 526, 527 (CCPA 1973). As such, it has not been demonstrated that one of ordinary skill in the embossing arts would have been motivated to or known to combine an embossing assembly with elements of a molding apparatus to arrive at the claimed invention. Accordingly, Applicant respectfully traverses the Examiner’s rejections, which include combinations of non-analogous references.

In view of the foregoing, Applicant respectfully traverses each of the rejections of the claims. The present invention has been used as a roadmap to pick through the prior art and combine non-analogous references which persons of ordinary skill in the art would not have been motivated to combine. Accordingly, reconsideration and allowance are respectfully solicited.

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If the Examiner has any questions or suggestions of possible amendment for allowance, he is cordially invited to contact Applicant's attorney at the telephone number provided.

Respectfully submitted,

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